

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of measuring a thermal conductivity of an object, comprising:

positioning a heat source between and in contact with a surface of the object and a surface of a heat resistant material;

aligning the object, the heat source, and the heat resistant material along a substantially vertical axis;

causing heat to flow along a heat flow path from the heat source into the object and an interior of the heat resistant material;

measuring a temperature of at least two spaced apart locations aligned substantially parallel to the vertical axis, the locations being against or inside the heat resistant material, within a short period of time substantially less than one hour after first causing the heat to flow; and

calculating the thermal conductivity of the object ~~from~~ based on the temperature difference between the spaced apart locations as measured within the short period of time.

2. (Previously Presented) The method of claim 1 wherein the heat source has a central area and an auxiliary area surrounding the central area.

3. (Previously Presented) The method of claim 1 wherein an externally exposed surface of the heat resistant material is covered with a cover member.

4. (Currently Amended) An instrument for measuring the thermal conductivity of an object to be measured, comprising:

a heat resistant material having a heat resistance;

a temperature difference measuring unit capable of measuring a temperature difference between ~~at least two locations~~ a surface location spaced apart about from a second location of or inside the heat resistant material;

a heat generating unit configured to be placed vertically between the surface of the heat resistant material and a surface of the object;

wherein the heat generating unit is configured to generate heat between the surface of the object and the surface of the heat resistant material, causing heat to flow from ~~said the surfaces of the object and the heat resistant material into an interior to the second location of~~ the heat resistant material;

the temperature difference measuring unit is configured to measure ~~a the~~ temperature difference of the heat resistant material within a short period of time substantially less than one hour after heat is first generated; and

the thermal conductivity of the object ~~to be measured~~ is obtained from ~~a the~~ temperature difference, measured within the short period of time, between the surface location and the second location of at least two locations positioned vertically along the heat flow on the surface of or internal to the heat resistant material, the second location is aligned substantially vertically from the surface location.

5. (Previously Presented) The instrument of claim 4 wherein the heat generating unit comprises a main heat generating section for generating heat in a central area and an auxiliary heat generating section for generating heat in an area surrounding the main heat generating section.

6. (Previously Presented) A method of determining a thermal conductivity of a heat insulating material, comprising an inspection step in which heat is generated between the heat insulating material and a heat resistant material and caused to flow through the heat

insulating material and the heat resistant material, and a measurement step in which a temperature difference of the heat resistant material is initiated and is terminated after a period of time substantially less than one hour, and the thermal conductivity of the heat insulating material is obtained from a temperature difference between at least two points of the heat resistant material.

7. (Previously Presented) The method of claim 6 wherein a heat generation area is divided into a central area and an area surrounding the central area.

8. (Currently Amended) A method of ~~manufacturing a heat insulating material with measuring an object's thermal conductivity, pre-measured, comprising steps of~~ the method comprising:

generating heat between a surfaces of the object and a surface of a heat resistant material;

~~causing receiving a first amount of the generated heat to flow at least substantially vertically from said surfaces of~~ at the surface of the object and the heat resistant material into an interior of the heat resistant material;

receiving a second amount of the generated heat at the surface of the heat resistant material;

receiving at least a portion of the second amount of generated heat at a second location of the heat resistant material;

measuring a temperature difference between the surface location and the second location of the heat resistant material, the second location of at least two spaced apart locations and aligned substantially, vertically parallel to the vertical axis ~~surface location, the location being against or inside the heat resistant material, within a short period of time after heat is initially generated; and~~

calculating the thermal conductivity of the object from based on the temperature difference, as measured within a short period of time after heat is initially generated ~~the short period, between the spaced apart locations aligned substantially parallel to the vertical axis, the~~

~~location being against or inside~~surface location and the second location of the heat resistant material.

9. (Previously Presented) The method of claim 1 wherein the object is a heat insulating material.

10. (Previously Presented) The method of claim 1 wherein the object is a vacuum insulation material.

11. (Previously Presented) The method of claim 1, further comprising steps of predetermining a calibration curve showing a relation between the thermal conductivity and the temperature difference and applying the measured temperature difference to said calibration curve to determine the heat conductivity of the object.